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ABSTRACT

This study compared the institutional representation, experiences, and achievements of intercollegiate athletes to those of their classmates enrolled at a highly selective, private research university that competes in Division I of the National Collegiate Athletic Association. Data were obtained for three student cohorts of first-time freshmen, grouped by the intended year of graduation: (1) 2,902 matriculants from the class of 1989; (2) 2,832 matriculants from the class of 1994 ; and (3) 3,054 matriculants from the class of 2004. There were more and larger differences between the achievements and experiences of male athletes and nonathletes than between female athletes and nonathletes. Differentiation between athletes and nonathletes was more likely to persist across cohorts for males than females. (Contains 11 tables and 17 references.) (Author/SLD)

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MORE ALIKE THAN NOT? AN EXAMINATION OF WHAT DIFFERENTIATES INTERCOLLEGIATE ATHLETES FROM THEIR CLASSMATES

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More alike than not? An examination of what differentiates intercollegiate athletes from their classmates

This study compares the institutional representation, experiences and achievements of intercollegiate athletes to those of their classmates enrolled at a highly selective, private research university that competes in Division I of the NCAA. There were more and larger differences between the achievements and experiences of male athletes and nonathletes than between female athletes and nonathletes. Differentiation between athletes and nonathletes was more likely to persist across cohorts for males than females.

Introduction

Intercollegiate athletics has long been the topic of much debate in higher education (cf. Bok, 1985; Savage, 1929; Thelin, 1994). More recently, this discussion has shifted to the role of intercollegiate athletics in academically selective institutions. In The Game of Life, Shulman and Bowen (2001) examined changes in the representation, college experiences and academic achievements, and post-college activities of athletes compared to those of their peers who did not participate in college sports or "nonathletes"[1] in 30 selective colleges and universities. They documented a variety of negative impacts of intercollegiate athletics within these institutions, including opportunity costs associated with the admissions advantage extended to athletes, academic underachievement of athletes, and the development of an insular athletics culture. Findings from the Shulman and Bowen study cannot be generalized to all colleges and universities, nor are the conclusions reached indisputable. However, the study provides a useful framework for examining the role and correlates of intercollegiate athletics within individual institutions.

Entering College: Athletes and Nonathletes as Applicants and Matriculants

Intercollegiate athletics are playing a more prominent role in colleges and universities, even at academically selective institutions. Shulman and Bowen (2001) found that athletes comprise a sizeable portion of the undergraduate student body. Compared to earlier cohorts, an increasing proportion of male and female athletes are actively recruited to play on college teams. Recruited athletes have a greater probability of being admitted to college than other targeted applicant groups such as under-represented minority students and legacies; and this admissions advantage has increased over the past twenty-five years (Shulman & Bowen, 2001).

From the beginning of their undergraduate experience, athletes differ significantly from their nonathlete peers. Compared to their classmates, male and female recruited athletes generally enter their

[1] For the sake of brevity in this paper, we generally use the terms "athletes" to refer to students who have participated in intercollegiate athletics and "nonathletes" to refer to students who have not participated in intercollegiate athletics.

freshman year with significantly lower high school grades and college admission test scores (Hood, Craig, & Ferguson, 1992; Pascarella & Smart, 1991; Shulman & Bowen, 2001). Shulman and Bowen (2001) report evidence that male and female athletes are more competitive, hold more politically conservative views, and place less importance on contributing to science or the arts; further, male athletes are more interested in pursuing business careers and achieving financial success than their male classmates.

The Undergraduate Experience: Achievements and Experiences

Athletic participation has been positively associated with students' motivation for degree completion (Astin, 1984; Pascarella & Smart, 1991; Ryan, 1989). Athletes graduate at comparable or higher rates than their nonathlete peers (Shulman & Bowen, 2001). Beyond these findings, there is conflicting evidence concerning the impact of athletic participation on students' college achievements and experiences.

Bowen and Shulman (2001) observed that male athletes are increasingly concentrated in selected major fields, particularly the social sciences. This clustering of athletes has increased in more recent cohorts and is becoming evident among female athletes as well. Bowen and Shulman (2001) also found athletes achieved significantly lower grades than nonathletes. Moreover, this gap in academic achievement has increased over successive cohorts, for both males and females. Other researchers have found equivalent grade achievement between athletes and nonathletes (Hood et al., 1992; Pascarella & Smart, 1991; Smith & Dizney, 1966; Stuart, 1985). Pascarella and colleagues reported significant negative impacts of athletic participation on standardized achievement tests administered at the end of the freshman year (Pascarella, Bohr, Nora, & Terenzini, 1995). However, with the exception of males playing football and basketball, this relative disadvantage in cognitive development did not persist into the second and third years of college (Pascarella et al., 1999). These conflicting findings may be the product of several factors. The cognitive consequences of athletic participation vary by type of sport and gender (Pascarella et al., 1995; Pascarella et al., 1999). Not all studies have controlled for pre-college differences between athletes and nonathletes.

Research on the noncognitive impacts of athletic participation has also produced varying results. Involvement in intercollegiate athletics has been positively correlated with students' satisfaction with their undergraduate experience (Astin, 1984; Pascarella & Terenzini, 1991; Ryan, 1989). Some studies have found a negative relationship between athletic participation and students' involvement in other social and cultural activities on campus (Bredemeier & Shields, 1986; Stone & Strange, 1989) while others have reported a positive relationship (Astin, 1993; Pascarella & Smart, 1991; Ryan, 1989).

Post-Graduation Experiences and Achievements

Shulman and Bowen (2001) reported extensively on the experiences and achievements of athletes and nonathletes after completion of the undergraduate degree. On the whole, male athletes were less likely to attain advanced degrees, particularly doctorates, than male nonathletes. Male athletes are increasingly more likely than other males to be employed in business and finance, and less likely to work in scientific and other professional occupations. They are also more likely to be employed in for-profit and self-employment sectors. Male athletes have consistently earned higher incomes than male nonathletes; this earning advantage varies by employment field and sector, and by institutional type. Compared to their nonathlete classmates, female athletes in earlier cohorts had higher or comparable advanced degree attainment, were more likely to be doctors or academics, and earned significantly higher salaries than nonathletes. However, these advantages have diminished in more recent cohorts.

Taken together, Shulman and Bowen's findings suggest that female athletes are becoming more similar to male athletes, and that athletes are becoming increasingly dissimilar from nonathletes. The authors posit that a distinctive "athletic culture" is evolving – in which athletes live, learn and socialize much more with other athletes than with their classmates who are not involved in intercollegiate sports.

To what extent are the Bowen and Shulman findings applicable to other academically selective institutions? In particular, the inconsistent evidence concerning the cognitive and noncognitive impacts of athletic participation suggests this relationship is complex, and may depend upon the unique educational and athletic milieus of individual institutions.

Purpose of Study

The subject institution is a highly selective, private research university that competes in Division I of the NCAA, primarily as a member of the Ivy League. The university fields 18 intercollegiate teams each for women and men. Intercollegiate athletes comprise approximately 10 percent of the undergraduate student population. While the university was invited to participate in the Shulman and Bowen study, the magnitude of the longitudinal data required for the research proved prohibitive. Still the debate about the role of intercollegiate athletics, as well as the findings of Shulman and Bowen, is very much alive at this university. This research was undertaken to help contextualize deliberations of this issue on campus.

The purpose of our study was to compare the institutional representation, achievements and experiences of students who have participated in intercollegiate athletics to those who have not. Specific research questions addressed were:

1. How do the admit rates, attitudes and goals of athlete matriculants compare to those of nonathlete matriculants?
2. How do the undergraduate achievements and experiences of athletes compare to those of nonathletes?
3. How do the post-graduation experiences and achievements of athletes compare to those of nonathletes?

A general objective was to examine the extent to which Shulman and Bowen's findings were consistent with the experiences of athletes at our institution. We replicated, where both possible and relevant, Shulman and Bowen's approach to comparing student-athletes to their nonathlete peers. Comparisons of athletes and nonathletes were examined within gender and across three cohorts. Further, we were interested in sharing our research process and findings with other institutions that may be interested in mounting similar studies.

Methodology

Data Sources

This study employed admissions and registrar's data for three student cohorts: first-time freshmen who applied and matriculated in Fall 1985, Fall 1990 and Fall 2000 (Classes of 1989, 1994 and 2004, respectively). Table 1 shows the number of students included in each cohort of applicants and matriculants by gender.

[Insert Table 1 about here]

This university conducts a comprehensive program of institution-wide survey research with its undergraduate students. Additional data were drawn from the following surveys: Class of 1989 Alumni Survey; Class of 1994 Senior Survey; Class of 1994 Alumni Survey; and Class of 2004 CIRP Freshman Survey.

Variables

Defining "Athletes"

This study distinguished between students identified as potential athletes in the admissions process, and students who were involved in intercollegiate athletics while enrolled as undergraduates. For admissions analyses, recruited athletes were freshman applicants who had been recruited to play on one or more intercollegiate teams. One objective of the study was to examine the utility of various operational definitions of athletic involvement by enrolled students at this institution. The following measures of athletic involvement were examined: whether or not a student participated on an intercollegiate team (team participation); whether a student participated as a recruited athlete, as a walk-on, or had not participated on an intercollegiate team (recruitment status); whether or not a student received one or more athletic letters (athletic award); whether a student participated in the high profile (men's basketball, football and ice hockey), lower profile, or no intercollegiate sports (team participation by profile of sport);

and whether a student received an athletic award for participating in a high profile or lower profile sport (athletic award by profile of sport).

Entering College

We compared the representation of athletes and nonathletes as undergraduate matriculants across cohorts. We used Petersen's (1985) formula to calculate the admissions advantage – that is, the change in the probability of admission (Delta-*p*) statistic – of recruited athletes relative to other applicant groups. Three items from the Fall 2000 CIRP Freshman Survey were used to compare attitudes and goals of athletes and nonathletes entering as freshman. The first was political orientation (far left, liberal, middle-of-the-road, conservative or far right). Social attitudes measured the extent of agreement (scale from 1 = disagree strongly to 4 = agree strongly) with 16 statements concerning social issues (e.g., there is too much concern in the courts for the rights of criminals; the death penalty should be abolished; the activities of married women are best confined to the home and family). Personal goals asked students to rate the importance to them (scale from 1 = not important to 4 = essential) of 20 personal goals (e.g., becoming accomplished in one of the performing arts; raising a family; being very well off financially). Finally, we measured degree aspirations with a CIRP question that asked students to indicate the highest academic degree they intended to obtain at any college (from none to Ph.D. or Ed.D).

Undergraduate Achievements and Experiences

We used three variables from institutional files as indicators of undergraduate academic achievement and field of study. Graduation rates were measured as the number of students who graduated within six years of matriculation. In order to compare grade achievement across cohorts, we transformed cumulative grade point averages (GPAs) of graduates to percentiles, calculated within gender. We compared students' choices of academic majors within five categories: humanities (e.g., art, English, history), social science (e.g., psychology, sociology, economics), natural science (e.g., chemistry, biology, physics), engineering (including computer science), and other professional fields (e.g., agriculture, architecture, labor relations).

Variables from the 1994 Senior Survey provided measures of students' noncognitive experiences. We included two measures of satisfaction: students' satisfaction with their undergraduate education (scale from 1 = very dissatisfied to 5 = very satisfied); and their satisfaction with specific aspects of their college such as courses, learning facilities, and student services (scale from 1 = very dissatisfied to 4 = very satisfied). Extracurricular involvement was assessed by students' frequency of participation in cultural, social, political and athletic clubs or organizations (scale from 1 = not at all to 3 = frequently). Finally, personal goals were measured with students' ratings of importance (scale from 1 = not important to 4 = essential) of 18 personal goals (e.g., becoming accomplished in one of the performing arts; raising a family; being very well off financially).

Post-Graduation Experiences and Achievements

The 2000 Alumni Survey administered to the Classes of 1989 and 1994 provided measures of former students' post-graduation experiences and achievements. Further education was measured by: whether or not students had enrolled in a degree program since their undergraduate graduation; and advanced degree attainment (Master's, law or medical, doctorate). We examined graduates' current job choices by comparing their representation in four professional fields (engineer or computer scientist, physician or surgeon, lawyer, and business) and four employment sectors (self-employment, private for-profit, government or other public, and private non-profit). Finally, we compared the individual income of graduates, in 1999 dollars, in four dollar ranges: $45,000 or less, $45,001 to $75,000, $75,001 to $115,000, and $115,000 or more.

Analyses

Descriptive statistics were run on all study variables. Bivariate analyses (chi square and ANOVA) were used to test the significance of differences in representation, achievement and experiences between athletes and nonathletes. Differences were compared within gender and across student cohorts. Logistic regression was employed to calculate comparative admissions advantages among applicant groups.

Results

Athletes and Nonathletes as Freshman Matriculants

How similar or different are athletes and nonathletes as they apply for and commence their undergraduate studies? We began our analyses by comparing the representation, admission advantages, and personal attitudes and goals of first-year students who did and did not participate in intercollegiate athletics.

Representation of Athletes as Undergraduate Students

We examined the representation of athletes across three cohorts of undergraduate matriculants and by gender. For this analysis, we employed five measures of "athlete" and evaluated their potential utility for contributing to institutional deliberations about the role of athletics. Results are shown in Table 2.

[Insert Table 2 about here]

Considering all students and operational measures, participation rates in intercollegiate athletics have remained relatively stable over the past 15 years. The appearance of a downward trend in participation is most likely a product of measurement limitations (Class of 2004 data only include freshman-year athletic participation) and a change in league policy regarding the number of individuals that can be carried on the football squad. Compared to their female counterparts in the Classes of 1989 and 1994, a significantly greater proportion of male students had been recruited athletes, walk-on athletes and had received an athletic letter. There were no significant gender differences in freshman-year athletic participation for the Class of 2004.

The various operational measures of athletic involvement yielded comparable patterns but slightly different rates of participation. The initial plan for this study was to replicate the operational definition of "athlete" employed by Shulman and Bowen – receipt of an athletic award – as this would permit comparison of our local findings with those of their study. This was only possible for dichotomous and continuous measures; the small raw numbers of students per cohort who received awards precluded

employing this definition for categorical measures. Given the small number of male students who participated in high profile sports, we elected not to use this measure for further analyses. Ultimately, we retained the following three measures of athletic participation for our study: team participation and, where cell size permitted, recruitment status and receipt of athletic letter.

Admissions Advantages of Athletes and Nonathletes

We compared admissions probabilities across the Fall 1985, 1990 and 2000 applicant cohorts for three groups of prospective first-year students: recruited athletes, under-represented minority applicants, and legacies[2]. Logistic regression was used to estimate the probability of admission associated with membership in each of the applicant groups. We controlled for differences in SAT scores and whether or not students had applied for early decision. Separate models were run for female and male applicants. Table 3 presents the admissions advantages associated with applicant groups by cohort and gender.

[Insert Table 3 about here]

There has been an increased admissions advantage from the 1985 to 2000 applicant pools for all three groups of female applicants. However, both the greatest increase and largest admissions advantage overall was associated with being a recruited athlete. In the Fall 2000 applicant pool, a female recruited athlete was 60% more likely to be admitted to the freshman class than other female applicants with comparable SAT scores and early decision application status. This was a considerably greater likelihood of admission than that associated with being an under-represented minority or legacy applicant in Fall 2000, and represented more than a 50% proportional increase in admissions advantage from the Fall 1985 and 1990 cohorts. In comparison, the admissions advantage associated with being a male legacy or under-represented minority applicant remained virtually unchanged over the three applicant cohorts. However, the probability of a male recruited athlete being admitted relative to that of male applicants who were not recruited athletes increased from 45% in Fall 1990 to 60% in Fall 2000.

[2] A "legacy" refers to an applicant whose parent or grandparent is an alumnus of the subject institution.

The increased admissions advantage enjoyed by athletes is likely attributable to more focused recruiting efforts by coaches and greater pre-screening activities by admissions personnel; both changes serve to sift out those potential athletes who are unlikely to be offered admission.

Attitudes and Goals of Athletes and Nonathletes

We used data from the CIRP Freshman Survey to compare the social attitudes, personal goals and degree aspirations of athletes and nonathletes entering as first-year students in Fall 2000. Responses from 1,121 freshmen were matched with athletic participation data. Gender representation (47% females and 53% males) and athletic participation (10% participants) for the sample were consistent with those of the total cohort.

Shulman and Bowen (2001) reported more conservative political views among athletes than students who had not participated in intercollegiate athletics. We found no significant differences in the espoused political orientations of athletes and nonathletes at our institution. However, there was evidence of stronger conservatism among athletes in students' views on specific social issues. Table 4 presents items for which there were significant differences within gender by athletic team participation.

[Insert Table 4 about here]

Differences in social attitudes by athletic participation were more pronounced among male students than female students. Compared to their nonathlete counterparts, male athletes were more conservative or traditional in their views. They were significantly less likely to agree with legalizing marijuana, same-sex marriage and the power of individual actions to change society; and significantly more likely to agree with hate speech prohibitions and keeping married women at home. Female athletes were significantly less likely than female nonathletes to agree with legalizing marijuana and, although not a statistically significant difference, less likely to agree with legalizing same-sex marriage.

Students who go on to participate in intercollegiate athletics may hold different personal goals than their classmates at the time they enter college (Shulman & Bowen, 2001). Table 5 shows goals for which freshmen athletes and nonathletes entering in Fall 2000 gave significantly different ratings of importance.

[Insert Table 5 about here]

Again, there were more and larger differences in personal goals by team participation among male students. Consistent with Shulman and Bowen's (2001) findings, there was some evidence of a greater entrepreneurial focus among male athletes. They entered our institution with less interest in making original contributions to the performing arts and science, and developing a meaningful life philosophy; and with greater emphasis on being successful in their own business. Female athletes placed significantly less importance than nonathletes on obtaining recognition from their work colleagues.

Finally, we examined differences in entering athletes and nonathletes academic degree aspirations. At the point of entering their undergraduate education, male athletes reported significantly lower degree aspirations than male nonathletes. Almost 30% of male athletes intended to earn a Bachelor's degree or less at any academic institution, compared to less than 10% of male nonathletes. Conversely, male nonathletes were twice as likely as male athletes to aspire to a doctoral degree. There was no significant difference in the degree aspirations of females by team participation.

Undergraduate Achievements and Experiences of Athletes and Nonathletes

To what extent do our students' undergraduate achievements and experiences differ by athletic participation? We began by comparing graduation rates and grades of athletes and nonathletes. Next, we examined their respective representation in fields of study. Then, we compared three aspects of athletes' and nonathletes' noncognitive experiences: satisfaction with their undergraduate experience, extracurricular involvement, and personal goals.

Graduation Rates of Athletes and Nonathletes

Institutional files provided data on graduation rates for the Classes of 1989 and 1994. Because of the large sample size, we were able to contrast graduation rates by three measures of athletic participation: team participation, recruitment status, and athletic awards. Table 6 shows the proportion of students graduating within six-years of matriculation by cohort, gender and athletic participation measures.

[Insert Table 6 about here]

Although only two statistically significant differences were observed, several variations in graduation rates deserve comment. There was a slight increase in overall graduation rates from the Class of 1989 to 1994, but changes in graduation rates differed by gender and measure of athletic participation. For female students, athletic participation was associated with graduation rates that were higher than those of nonathletes in both cohorts. This was most pronounced for females who were recruited athletes, and who had been awarded a letter. The gap in female graduation rates narrowed slightly from the Class of 1989 to 1994, as the proportion of nonathlete graduates increased while that of walk-on athletes decreased. Among male students, walk-on athletes and those who had received letters had higher graduation rates than nonathletes; for lettered athletes, this difference was significant in the Class of 1994. Male recruited athletes had lower graduation rates than their nonparticipant and walk-on peers; this gap in graduation rates widened from the Class of 1989 to 1994.

Grade Achievement of Athletes and Nonathletes

Institutional files also provided data on the cumulative grade point averages (GPAs) achieved for the Classes of 1989 and 1994. Analysis were restricted to graduates. GPAs were transformed to percentiles calculated within gender. Table 7 shows the mean percentile rank of graduates by cohort, gender and athletic participation measures.

[Insert Table 7 about here]

In the Class of 1989, female graduates who had not participated in intercollegiate athletics had a significantly higher mean rank-in-class than athletes. Among the measures of athletic participation examined, being a walk-on athlete was associated with the highest average percentile rank, and earning an athletic letter was associated with the lowest. The achievement gap between athletes and nonathletes narrowed for female graduates in the Class of 1994. While female athletes in this cohort still had lower GPAs than nonathletes, regardless of operational measure, differences in grade achievement were not statistically significant. Male athlete graduates achieved significantly lower GPAs than their nonathlete peers in the Class of 1989, and these differences persisted in the Class of 1994. Among male athletes in both cohorts, walk-on athletes had the highest GPA – ranking, on average, at the 43rd percentile in their class – while recruited athletes had the lowest. Based on mean percentiles, almost two-thirds of recruited athletes in the Class of 1989 and one-half of recruited athletes in the Class of 1994 were ranked in the bottom third of their class.

Academic Majors of Athletes and Nonathletes

We compared the major fields of study chosen by athletes and nonathletes. Table 8 displays the percentage of students enrolled in five major fields in the Classes of 1989 and 1994 by gender and athletic team participation.

[Insert Table 8 about here]

There were no significant differences in the major fields chosen by female athletes and nonathletes. Major field of study did vary significantly between male athletes and nonathletes. In both cohorts, male athletes were more likely to major in professional fields and less likely to major in engineering and the natural sciences than were nonathletes. To further explore differences in male students' major choices, we compared the specific academic majors enrolling the greatest proportion of male nonathletes, recruited athletes and walk-on athletes for the Classes of 1989 and 1994. Compared to nonathletes, recruited athletes were more heavily clustered in this institution's equivalent of an undergraduate business major.

Both walk-on and recruited athletes had proportionally greater enrollment in political science than nonathletes.

Noncognitive Experiences of Athletes and Nonathletes

We used data from the Senior Survey administered to the Class of 1994 to compare athletes' and nonathletes' noncognitive experiences as undergraduates. Responses from 722 seniors were matched with athletic participation data. Gender representation (52% females and 48% males) and athletic participation (9% participants) of survey respondents were consistent with those of the total cohort.

The Senior Survey asks students to report their satisfaction with their undergraduate experience as a whole, and with specific aspects of their experience: the availability and quality of courses; learning facilities and resources; student services; contact with faculty and administrators; and social involvement. The majority of athlete and nonathlete seniors (76% and 73% respectively) reported being generally or very satisfied with their undergraduate experience. In general, both groups of seniors were more likely to report being satisfied than dissatisfied with specific aspects of their experience. Table 9 presents those satisfaction measures for which there were significant differences by athletic participation.

[Insert Table 9 about here]

Compared to females who had not participated on athletic teams, female athletes were more satisfied with athletic and computer facilities (a larger percentage reported being "very satisfied") and opportunities to participate in extracurricular activities. They were comparatively less satisfied with foreign language facilities, the responsiveness of administration to student concerns, and the climate for minority students on campus. Male athletes were significantly less satisfied than male nonathletes with humanities and arts courses, class size and administrative responsiveness to student concerns. It bears noting that athletes and nonathletes did not differ significantly in their satisfaction with the availability of faculty outside of class, quality of instruction, and sense of community on campus.

Senior survey respondents reported whether they had participated in a variety of extracurricular clubs and services "frequently," "occasionally" or "not at all." Only one statistically significant difference in extracurricular involvement emerged; as would be expected, female and male athletes reported much greater participation in intercollegiate athletics than their nonathlete counterparts. While differences were not statistically significant, athletes had generally comparable or higher participation rates in intramural sports, volunteer services and religious services, and lower participation rates in student government, political and cultural clubs, and the student newspaper.

Like the Freshman Survey, the Senior Survey asked students to indicate the importance to them of a number of personal goals. Among seniors graduating in 1994, there was only one significant difference in importance ratings by athletic participation. Female athletes attached less importance to developing a meaningful philosophy of life than female nonathletes. While the following differences were not statistically significant, female and male athletes alike attributed less importance to goals related to the arts than their nonathlete peers, and male athletes placed more importance on having administrative responsibility for others and being well off.

Post-Graduation Experiences and Achievements of Athletes and Nonathletes

The final step in our examination of athletes and nonathletes focused on their experiences and achievements following the attainment of an undergraduate degree. We compared former students' choices concerning further education and jobs, and their earnings. Data for these analyses came from alumni surveys administered in 2000 to the Class of 1989 and Class of 1994. We matched 1,148 Class of 1989 alumni, and 1,024 Class of 1994 alumni with corresponding athletic participation data. Gender representation (49% female and 51% male for Class of 1989 alumni; 51% female and 49% male for Class of 1994 alumni) and athletic team participation rates (12% participants for Classes of 1989 and 1994 alumni) were consistent with their respective class profiles.

Advanced Degree Attainment of Athletes and Nonathletes

Both alumni surveys asked respondents whether they had enrolled in a degree program since graduating with an undergraduate degree, and for those who had pursued further education, the level of additional degrees attained. It would be reasonable to expect higher rates of advanced degree attainment among the Class of 1989, particularly for the attainment of doctorates, given their longer time out from their first degree. Table 10 shows the proportion of graduates from each class who pursued further education.

[Insert Table 10 about here]

There were no statistically significant differences in the advanced educational attainments of female athletes and nonathletes. A larger proportion of Class of 1989 female nonathletes had enrolled in post-baccalaureate degree programs and attained law or medical degrees; but among the Class of 1994, female athletes had pursued advanced degrees at rates comparable to and higher than those of female nonathletes. Male athletes and nonathletes differed significantly in their advanced degree attainment, with some evidence of a widening gap from the Class of 1989 to the Class of 1994. Virtually equal proportions of Class of 1989 male athletes and nonathletes had enrolled in further degree programs, but significantly fewer athletes than nonathletes had done so from the Class of 1994. In the Class of 1989, male athletes were more likely than nonathletes to have received a Master's degree; in the Class of 1994, a significantly smaller proportion of athletes than nonathletes had attained Master's degrees.

Jobs of Athletes and Nonathletes

We examined the current job choices of athletes and nonathletes from both alumni cohorts (analyses are available from the authors by request). We first compared their representation by gender and athletic participation within four professional fields: engineer or computer scientist; physician or surgeon; lawyer; and business. Only one statistically significant difference was observed; in the Class of 1989 cohort, male athletes were significantly less likely than nonathletes to be employed as physicians or surgeons at the

time of the survey (4% versus 11%). We also compared the representation of both alumni cohorts within four sectors of current employment: self-employment; private for-profit; government or other public; and private non-profit. There were no significant differences in distribution across employment sectors among groups of graduates. Regardless of cohort, gender and athletic participation, graduates were most often employed in a private for-profit corporation or practice (more than 50% of all groups) and least often self-employed (generally less than 10%).

Earnings of Athletes and Nonathletes

Finally, we compared the earnings of athlete and nonathlete alumni. For both cohorts, salary was measured in 1999 dollars. Table 11 presents the distribution of graduates across ranges of individual income (in 1999 dollars and before taxes) by cohort, gender and athletic participation.

[Insert Table 11 about here]

Given the shorter employment history of Class of 1994 graduates, we would expect lower earnings relative to Class of 1989 graduates. In both cohorts, female athletes were more represented in the lower income ranges than female nonathletes; these differences were not statistically significant. Conversely, male athletes from both cohorts reported significantly higher earnings, on average, than male nonathletes.

Consistent with Shulman and Bowen's approach, we also compared individual earnings within two employment sectors: for-profit (self-employed or employed by private for-profit corporation); and non-profit (employed by government or other public institution, or by private non-profit organization). We found no significant differences in female graduates' earnings by athletic participation within these sectors. Among Class of 1989 graduates, male athletes employed in the for-profit and non-profit sectors had greater representation in higher income ranges than their nonathlete counterparts, but differences were not statistically significant. There were no significant difference in the earnings of Class of 1994 male athletes and nonathletes employed in the for-profit sector; but among male graduates from this

cohort employed in the non-profit sector, athletes reported significantly higher individual incomes than nonathletes.

Limitations

Several limitations of the study must be duly noted. This was a study of students' experiences at a single, private, highly selective institution. Our main intent was not to produce findings that would be statistically generalizable to all higher education institutions, but to study this issue for the purposes of internal deliberation and decision-making. At most, the findings reported here may be applicable to the experiences of athletes and nonathletes in other private, highly selective institutions. However, the description of the methodology employed and discussion of results should have broader applicability.

This was a cross-sectional study. We used a number of data "snapshots" to explore the similarities and differences between athletes' and nonathletes' attributes, experiences and achievements. While we can legitimately make these comparisons within each cohort, we certainly cannot claim to be assessing changes in individual students over time. Nevertheless, differences observed in athletes' attributes, experiences and achievements relative to those of nonathletes across the three cohorts permit us to examine the consistency of patterns.

There are also limitations regarding the availability and operational measurement of variables. As in all institutional research, we were restricted to the data on hand. Engagement in this study required assistance from numerous institutional personnel to extract data, and in the case of athletic participation, to enter hard-copy data into electronic files. Several desirable variables were either not available or not measured well enough to include in the study: chiefly, students' high school grade achievement and class rank, and measures of family socioeconomic status such as parental income and education. In the case of athletic participation variables, the type of operational definition employed was dictated by cell size. For many analyses, we were limited to using a dichotomous measure of athletic team participation.

Discussion and Conclusions

Are athletes and nonathletes at our institution more alike than not? This was the overarching question guiding the study. To a great extent, the answer to that question depends upon the gender of the student. There were more and larger differences evident between male athletes and nonathletes at our institution than between female athletes and nonathletes. It seems that being an intercollegiate athlete, even in an Ivy League institution that competes at what might be thought of as a more modest level, is more of a defining characteristic for males than females. The extent to which athletes are similar or dissimilar from their classmates appears to be comparatively less dependent upon the undergraduate cohort being considered. While some differences between athletes and nonathletes had widened across cohorts – for example, the admissions advantage associated with being a recruited athlete, and mean rank-in-class of male students – we did not observe the same degree of progressive differentiation reported by Shulman and Bowen (2001). However, this could clearly be an artifact of the much smaller time frame and fewer comparisons across time employed in our study. Finally, and this is more speculative on our part, the degree of similarity or dissimilarity between athletes and nonathletes may vary at different points during the undergraduate experience – whether students are being compared as entering freshmen, seniors, or alumni. For example, we found fewer differences by athletic participation in the personal goals of seniors than entering freshmen. In the following paragraphs, we discuss findings related to the three specific research questions posed in the study.

How do our athletes and nonathletes differ as freshmen applicants and matriculants? Compared to other applicants, female and male recruited athletes have a much higher probability of being admitted, and this admissions advantage has increased considerably over time. This increased advantage is partly due to changes in the recruiting and admissions processes. Coaches cull their pool of potential recruits far more carefully today and submit only their top choices to admissions directors. Admissions personnel have also come to be more discerning and more timely in their assessment of potential athletes.

What are the opportunity costs of choosing to admit recruited athletes over differently qualified applicants, particularly in a highly selective institution? How do intercollegiate athletics fit with the institutional mission? These are issues currently being deliberated within the institution.

Male athletes begin their undergraduate experience with more conservative attitudes, a greater focus on business-related goals and less on the arts, and lower degree aspirations than those of their male classmates. Female athletes enter college with attitudes and goals that are more similar to their peers. The representation of athletes within our institution has remained relatively stable over the past 15 years. Athletes comprise a substantively smaller proportion of our undergraduate student body than was observed among the liberal arts colleges and Ivy League universities participating in the Shulman and Bowen study. Ostensibly, this smaller representation might impede the development of a distinctive "athletic culture" within the institution, thus moderating the differences between athletes and nonathletes.

How do the undergraduate achievements and experiences of our athletes and nonathletes differ? Consistent with Shulman and Bowen's (2001) findings, we did not observe large differences in the graduation rates of athletes and nonathletes. Taking into consideration the selectivity of the institution, students involved in athletics at our institution appear to be achieving far better grades than what is reported nationally about college athletes. However, they are not achieving as well grade-wise in relation to their own classmates. This is particularly the case for male recruited athletes. This achievement gap may stem, in part, from differences in academic preparation and aptitude; male recruited athletes enter as freshmen with lower admission test scores than either nonathletes or walk-on athletes. It may also be a consequence of the time requirements of male sports. Or, as Shulman and Bowen (2001) suggest, it may be evidence of an athletic culture that is disidentified with academics. Our current data do not permit us to answer these questions.

There was some evidence that male athletes – especially recruited athletes – are clustered in social science and business-related majors. This may be a reflection of personal inclination, or may mean that certain majors have been targeted as receptive to athletes – perhaps because of course load, or probability

of acceptance. What is the effect of a disproportionate enrollment of athletes within particular majors? Given the comparatively small proportion of enrolled athletes, this clustering may be inconsequential. We are unable to discern a conclusive answer from these data, but the question warrants further investigation.

On the whole, our athletes seem to be just as satisfied with their undergraduate education as nonathletes. Athletes were less satisfied with several specific aspects of their educational experience – chief among these were administrators' responsiveness to student concerns, and for female athletes, the climate for minority students on campus. There were no significant differences in satisfaction with faculty members or student services. In most respects athletes appear to be as involved in extracurricular activities as nonathletes. With the obvious exception of intercollegiate athletics as an activity during their undergraduate years, athletes reported generally comparable participation rates in student clubs and organizations.

How do the post-graduation experiences and achievement of our athletes and nonathletes differ? While female athletes and nonathletes pursued advanced degrees at comparable levels and rates, there is evidence of a widening gap in advanced degree attainment between male athletes and nonathletes. There were few differences in the professional fields or employment sectors occupied by athletes and nonathletes. However, male athletes earned significantly higher incomes than male nonathletes; this is consistent with Shulman and Bowen's findings. When employment sector was controlled for, this income difference persisted only among male graduates employed in the non-profit sector. Given the small sample, we were unable to examine salary differences within specific professional fields.

Clearly, this study represents a beginning step in examining the issue of intercollegiate athletics for our institution. Study results achieved thus far are contributing to current discussion about the admissions process for athletes. Participation in the study has stimulated conversations concerning the types of data included in admissions files: chiefly, both the difficulty and importance of building measures of students' high school achievements. Our athletics personnel are obviously very interested in the study and are

working with institutional research personnel to maintain electronic files tracking students' athletics involvement.

Because of the comparatively small number of students participating in intercollegiate athletics at our institution, we will need to repeat these analyses with successive cohorts to help discern statistical aberrations from valid differences. Ideally, we will follow the Class of 2004 by continuing to track their athletic participation and administering the Senior Survey. This would provide longitudinal data for this cohort.

The small number of athletes also argues for the use of qualitative research to pursue some of these questions raised by this study. The gender difference in athletics is of particular interest. Why does being an athlete appear to have greater consequences for males than females? Is this a reflection of the greater attention given to male sports? Do male athletes feel less similar to their classmates than female athletes? Do they invest more time and energy into their role as an athlete? Are they less academically and socially integrated into campus life than female athletes? These would be interesting and important questions to explore.

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TABLE 1. Samples from Institutional Files by Cohort and Gender

	Class of 1989				Class of 1994				Class of 2004			
	Applicants		Matriculants		Applicants		Matriculants		Applicants		Matriculants	
	N	%	N	%	N	%	N	%	N	%	N	%
Overall												
	19,848	100.0	2,902	100.0	20,210	100.0	2,832	100.0	20,199	100.0	3,054	100.0
Gender												
Female	8,164	41.1	1,241	42.8	8,721	43.2	1,249	44.1	9,632	47.7	1,439	47.1
Male	11,684	58.9	1,661	57.2	11,489	56.8	1,583	55.9	10,567	52.3	1,615	52.9

Source. Institutional files.

TABLE 2. Athletes as a Percent of All Undergraduates by Cohort, Gender and Operational Definition of Athletic Participation

	Class of 1989			Class of 1994			Class of 2004		
	Total	Female	Male	Total	Female	Male	Total	Female	Male
Overall									
N	2,902	1,241	1,661	2,832	1,249	1,583	3,054	1,439	1,615
Team Participation*^^^**									
Nonparticipant	88.5	92.7	85.4	89.8	93.0	87.2	90.6	91.0	90.3
Participant	11.5	7.3	14.6	10.2	7.0	12.8	9.4	9.0	9.7
Recruitment Status*^^^**									
Nonparticipant	88.5	92.7	85.4	89.8	93.0	87.2	90.6	91.0	90.3
Recruit	5.2	3.9	6.2	5.1	3.5	6.4	6.2	5.6	6.7
Walk-on	6.3	3.5	8.4	5.2	3.5	6.4	3.2	3.4	3.0
Athletic Award*^**									
No letter	94.1	96.0	92.7	96.0	96.9	95.3	--	--	--
Letter	5.9	4.0	7.3	4.0	3.1	4.7	--	--	--
Team Participation by Profile of Sport									
High profile	--	--	4.9	--	--	3.6	--	--	2.5
Lower profile	--	--	9.8	--	--	9.2	--	--	7.2
Earned Athletic Letter by Profile of Sport									
High profile/letter	--	--	2.0	--	--	1.0	--	--	--
Lower profile/letter	--	--	5.3	--	--	3.7	--	--	--

Source: Institutional files.

Note. Data for Classes of 1989 and 1994 include athletic participation across four years. Class of 2004 data only include freshman year athletic participation; no freshman athletes had earned letters. High profile sports are men's basketball, football and ice hockey. Significance tests examined differences in participation by gender.

*** $p < .001$ for Class of 1989; ^^^ $p < .001$, ^ $p < .05$ for Class of 1994

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TABLE 3. Admissions Advantage by Cohort, Gender and Applicant Group

	Increased likelihood of admission (%)					
	Class of 1989		Class of 1994		Class of 2004	
Applicant Group	Female	Male	Female	Male	Female	Male
Recruited athlete	36.9	46.1	36.3	44.5	59.5	60.2
Under-represented minorit	41.3	41.8	43.6	43.5	47.2	44.1
Legacy	14.9	15.4	11.4	13.1	20.7	16.7

Source. Institutional files.

Note. Logistic regression was used to estimate the probability of admission associated with membership in each applicant group. Differences in SAT scores and applying for early decision were controlled for. Change in probability of admission was calculated using Petersen's (1985) formula.

TABLE 4. Attitudes of Fall 2000 Freshmen by Gender and Team Participation

	% reporting "agree" or "strongly agree"			
	Females		Males	
Social Issue	Nonpart	Participant	Nonpart	Participant
Abortion should be legal^	78.6	78.2	72.9	74.0
Marijuana should be legalized*	43.7	23.7	40.6	26.5
Racial discrimination is no longer a problem^	12.6	12.7	18.2	18.0
Individual can do little to change society^^	20.7	14.5	27.3	16.0
Colleges should prohibit racist/sexist speech^	59.5	61.8	47.9	64.0
Same-sex couples should have right to marry^	83.7	72.7	71.3	54.0
Married women should be at home^^^	9.1	10.9	19.2	28.0

Source. Fall 2000 CIRP Freshman Survey.

* $p < .05$ between females by team participation

^^^ $p < .001$; ^^ $p < .01$; ^ $p < .05$ between males by team participation

TABLE 5. Importance of Personal Goals of Fall 2000 Freshmen by Gender and Team Participation

	% reporting "very important" or "essential"			
	Females		Males	
Goal	Nonpart	Participant	Nonpart	Participant
Becoming accomplished in performing arts^^	13.0	9.1	15.2	8.0
Obtaining recognition from colleagues**^	55.8	38.2	58.6	50.0
Making theoretical contribution to science^^^	27.0	26.0	38.8	10.0
Becoming successful in own business^	35.6	24.1	37.1	56.0
Developing a meaningful philosophy of life^^	55.7	51.9	53.7	36.7

Source. Fall 2000 CIRP Freshman Survey.

** $p < .01$ between females by team participation

^^^ $p < .01$, ^^ $p < .01$, ^ $p < .05$ between males by team participation

TABLE 6. Six-Year Graduation Rates by Cohort, Gender and Athletic Participation

	% graduating within six years			
	Class of 1989		Class of 1994	
	Female	Male	Female	Male
Overall	91.4	90.1	93.0	89.6
Participated on Team*				
Nonparticipant	90.9	89.9	92.7	89.9
Participant	97.8	91.4	96.6	87.1
Recruitment Status				
Nonparticipant	90.9	89.9	92.7	89.9
Recruit	100.0	87.4	100.0	83.0
Walk-on	95.3	94.3	93.2	91.2
Athletic Award^				
No letter	91.1	89.9	92.7	89.2
Letter	98.0	93.4	100.0	97.3

Source. Institutional files.

Note. Significance tests examined differences in graduation rates within gender.

* $p < .05$ for females in Class of 1989; ^ $p < .05$ for males in Class of 1994

TABLE 7. Mean GPA Percentile of Graduates by Cohort, Gender and Athletic Participation

	Mean GPA Percentile			
	Class of 1989		Class of 1994	
	Female	Male	Female	Male
Overall	50.5	50.5	50.5	50.5
Participated on Team	***	***		^^^
Nonparticipant	51.4	52.6	50.8	52.2
Participant	39.5	38.6	47.0	38.6
Recruitment Status	***	***		^^^
Nonparticipant	51.4	52.6	50.8	52.2
Recruit	37.3	31.1	44.7	34.1
Walk-on	42.2	43.6	49.5	42.6
Earned Athletic Letter	***	***		^^^
No letter	51.2	51.7	50.8	51.1
Letter	34.9	36.3	41.8	38.7

Source. Institutional files.

Note. Significance tests examined differences in GPA percentiles within gender.

*** $p < .001$ for Class of 1989; ^^^ $p < .001$ for Class of 1994

TABLE 8. Enrollment in Academic Majors by Cohort, Gender and Team Participation

	% students enrolled in major							
	Class of 1989				Class of 1994			
	Female		Male		Female		Male	
Academic Major***^^	Nonpart	Part	Nonpart	Part	Nonpart	Part	Nonpart	Part
Humanities	11.5	11.0	9.0	6.9	11.1	6.8	7.4	4.0
Social sciences	19.1	23.1	16.1	17.6	19.4	21.6	14.3	12.4
Natural sciences	13.8	13.2	14.9	7.3	16.2	15.9	16.4	15.3
Engineering	9.8	6.6	29.1	23.6	11.1	11.4	29.6	22.3
Other professional fields	45.6	46.2	30.2	44.2	40.6	44.3	29.6	41.6
Undeclared	0.3	0.0	0.8	0.4	1.5	0.0	2.7	4.5

Source. Institutional files.

Note. Significance tests examined differences in majors by athletic participation within gender.

*** $p < .001$ for males in Class of 1989; ^^ $p < .01$ for males in Class of 1994

TABLE 9. Satisfaction with Undergraduate Experience of Class of 1994 Seniors by Gender and Team Participation

	% reporting "generally satisfied" or "very satisfied"			
	Females		Males	
Aspect of Undergrad Education	Nonpart	Participant	Nonpart	Participant
Humanities and arts courses^	92.3	96.7	91.6	80.0
Class size^	74.9	75.8	68.1	53.0
Foreign language facilities***	94.9	86.7	89.9	80.0
Athletic facilities*	76.5	70.0	66.2	60.6
Computer services and facilities*	90.5	82.7	87.2	83.3
Administration responsiveness*^^^	53.0	38.4	46.8	22.6
Climate for minority students**	60.2	27.8	61.1	50.0
Extracurricular opportunities**	87.9	96.3	87.1	78.8

Source. 1994 Senior Survey.

Note. Satisfaction was reported using the scale: 1 = very dissatisfied; 2 = generally dissatisfied; 3 = generally satisfied; 4 = very satisfied.

*** $p < .001$, ** $p < .01$, * $p < .05$ between females by team participation

^^^ $p < .001$, ^ $p < .05$ between males by team participation

TABLE 10. Further Education of Graduates by Cohort, Gender and Team Participation

	% graduates attaining degree							
	Class of 1989				Class of 1994			
	Female		Male		Female		Male	
Further Education	Nonpart	Part	Nonpart	Part	Nonpart	Part	Nonpart	Part
Enrolled in degree program^	76.1	66.0	77.5	72.6	68.1	73.1	66.2	50.7
Received law or medical degree*	22.7	16.0	25.7	12.9	21.3	22.6	17.0	10.8
Received Master's degree^	45.5	46.0	45.9	52.9	26.6	32.1	31.2	18.9
Received doctorate	7.2	6.0	10.0	5.9	3.4	1.9	4.5	2.7

Source. Alumni Survey, 2000 (Class of 1989) and Alumni Survey, 2000 (Class of 1994)

Note. Significance tests examined differences in degree attainment by athletic participation within gender.

* $p < .05$ for males in Class of 1989; ^ $p < .01$ for males in Class of 1994

TABLE 11. Individual Income in 1999 of Graduates by Cohort, Gender and Team Participation

	% graduates within income range							
	Class of 1989				Class of 1994			
	Female		Male		Female		Male	
Individual Income*^	Nonpart	Part	Nonpart	Part	Nonpart	Part	Nonpart	Part
$45,000 or less	47.7	43.5	19.3	16.0	58.0	65.4	47.9	30.6
$45,001 to $75,000	24.0	32.6	27.2	14.8	28.7	13.5	28.1	30.6
$75,001 to $115,000	18.0	10.9	29.1	30.9	9.3	15.4	15.2	20.8
$115,001 or more	10.2	13.0	24.3	38.3	4.1	5.8	8.8	18.1

Source. Alumni Survey, 2000 (Class of 1989) and Alumni Survey, 2000 (Class of 1994)

Note. Significance tests examined differences in individual income by athletic participation within gender.

* $p < .05$ for males in Class of 1989; ^ $p < .01$ for males in Class of 1994

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